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material, Professor PICKERING concludes that the period of the variable is 31.4 days, more than three times as long as that of any other known star of the *Algol* type. The star remains at maximum brightness for 28 days, and takes about three days to go through its minimum, decreasing from 8.9 to 11.6 magnitude.

This star was observed here photometrically with the 12-inch equatorial on the nights of June 29th, 30th, and July 1st. The actual minimum was not obtained, as it came in the daytime, but a curve through the observations shows that the minimum occurred at a time very close to that predicted by Professor PICKERING. The next minimum, July 31^d 19^h 26^m G. M. T., will be more favorable, and it is hoped to obtain observations of it.

I have also under observation a list of about twenty other new variable stars, and four variables of very faint minima are being followed with the 36-inch refractor.

S. D. TOWNLEY.

MEASUREMENT OF CLOSE DOUBLE STARS.

Dr. HERMANN STRUVE, Director of the Königsberg Observatory, has recently advanced a doctrine in reference to the measurement of close double stars which will hardly be acceptable to double-star observers, who have the use of telescopes of the largest sizes and good atmospheric conditions. He states it as his opinion that, even under the most favorable circumstances, when the distance between the components of a double star is less than 0″.40 approximate estimations only of the position-angle can be obtained, and when the distance is under 0″.50 that it has not been demonstrated that the distance is given more accurately by micrometer measurement than by mere estimation, and, further, he regards the results of the attempts which have been made to supply this demonstration as purely illusory.

Every one of experience will, I think, be ready to admit that when an observer has become accustomed to a given telescope and given eye-pieces in connection with it, he may acquire an accuracy in the estimation of small angular distances which is surprisingly near the truth. But before he can make such estimates he must acquire a knowledge of the scale of his instrument and the effect of the eye-pieces employed. Now this knowledge can only be obtained practically by measuring distances of the same order of magnitude as those to be estimated or by relying upon such measures already made by an observer of experience. In either case the estimates, to be reliable, must be based upon measured or measurable quantities.

The angular diameter of the central disk of the image of a star of the fifth or sixth magnitude as formed by the thirty-six-inch refractor of the Lick Observatory is not much more than 0″.10; the theoretical value is 0″.13. The disks for faint stars are somewhat smaller than for bright ones. The apparent thickness of the spider threads used as micrometer-wires in this instrument is very approximately 0″.10. When the atmospheric conditions are favorable, giving good images of the stars, and when a sufficiently high power is used the micrometer-wire even when fully illuminated may be seen as a dark line crossing and almost concealing the central disk of the star which it bisects. The appearance of the wire as a dark line crossing the disk makes the bisection of the disk perfectly definite; it also makes perfectly definite the simultaneous bisection of two separated disks as in the measurement of position-angle by means of a single wire, or of the distance by the use of two.

A double star having components equal or nearly equal in brightness can be measured with this instrument under such atmospheric conditions as often prevail at Mt. Hamilton, whenever the distance between the components is greater than the thickness of a micrometer-wire. When the distance is somewhat less than this, an elongation of the image is still very apparent and an approximate determination of the position-angle and distance may be obtained by measurement and not by mere estimation. When the apparent distance becomes as small as 0″.05, the images coalesce and appear almost or quite round, even with the highest powers that are used; viz., 2400 and 2600. For distances greater than 0″.15 the images of the stars under good atmospheric conditions are clearly separated, and then measures can be made with certainty. For a distance of a third of a second the images are separated by a space of several times their own diameters, and there is then no excuse here for estimating such a distance rather than measuring it.

W. J. HUSSEY.

DISCOVERY OF THE DOUBLE STAR *IOTA SERPENTIS.*

With the thirty-six-inch refractor on the night of July 17, 1902, I found this 4.5th-magnitude star to be a close double. The components are of sensibly the same brightness. My measures of position angle and distance are as follows:—

1902.542	71°.4	0″ 20	
.545	72 .3	0 .21	
1902.54	71°.8	0″.20	2 n.

The position of ι *Serpentis* for the epoch 1900.0 is:—

R. A. = $15^h\ 37^m\ 5^s.51$.
Decl. = $+ 19° 59' 32''.2$.

Its proper motion is small.

I have also found some other new double stars in this vicinity. The 7.5th-magnitude star 4′ north and 9^m preceding ι *Serpentis* is one of these. Its distance is about a third of a second, and the components are of the same magnitude.

W. J. HUSSEY.

CHANGES IN THE LICK OBSERVATORY STAFF.

Dr. HEBER D. CURTIS has been appointed Assistant in the Lick Observatory for three years, dating from the departure of the Mills Expedition to Chile, with principal duties in spectroscopy. Dr. CURTIS is a graduate of Michigan University, A. B., '92, and A. M., '93; was professor of mathematics and astronomy in the University of the Pacific, 1897-1900; was an eclipse observer in Georgia, 1900, and Sumatra, 1901; and has this year taken his Ph. D. degree at the University of Virginia.

Mr. C. A. G. WEYMOUTH, of the class of 1902, University of California, has been appointed Fellow in Astronomy at the Lick Observatory.

W. W. CAMPBELL.

HONORARY DEGREE FOR DIRECTOR CAMPBELL.

The University of Wisconsin conferred the honorary degree of Doctor of Laws upon Professor W. W. CAMPBELL,